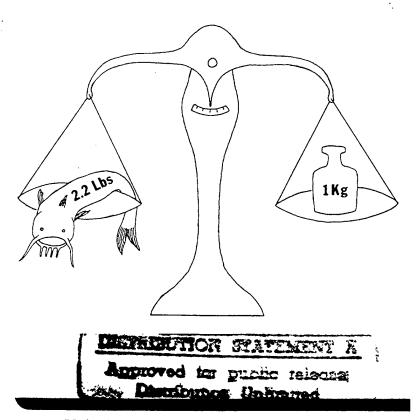
Conversions Useful in Fish Culture and Fishery Research and Management



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Compiled by

Brenda Rodgers Moore Andrew J. Mitchell

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Abbreviations not defined in the lists of conversions.

atmosphere (atm)	mercury (Hg)
avoirdupois (avdp)	minute (min)
British Imperial (B.I.)	per (/)
Celsius (C)	percent (0/0)
day (d)	per mille $(0/\infty)$
Fahrenheit (F)	Rankine (R)
hour (h)	second (s)
international nautical	United States (U.S.; only
mile (INM)	with measurement)
Kelvin (K)	water (H ₂ O)

Conversions Useful in Fish Culture and Fishery Research and Management

compiled by

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These tables of conversions from metric to English and English to metric measurements, as well as to metric and English from other systems such as British Imperial and troy, are primarily designed for use by fish farmers, fish culturists, and fishery technicians and scientists. The lists are compiled in the form we have found to be most useful. Also included are tables for conversion of Fahrenheit to Celsius temperatures, gallons to liters, and miles to kilometers.

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Conversions

```
acre(A) =
        4046.9 m<sup>2</sup>
        40.469 a
        0.405 ha
        43,560 ft<sup>2</sup>
        4840 \text{ yd}^2
        160 \text{ rod}^2
        0.00156 \text{ mi}^2
        circle 235.4 ft diameter
        square 208.71 ft/side
acre-foot (A-ft) =
        1,233,500 L
        1233.5 \text{ m}^3
        1.233 dam<sup>3</sup>
        1,233,500 kg H<sub>2</sub>O
        2,718,000 lb H<sub>2</sub>O
        325,850 gal
        43,560 ft<sup>3</sup>
        1 A of surface covered with 1 ft H<sub>2</sub>O
ångström (Å) =
        0.1 nm
        0.000000001 m
        10^{-10} \text{ m}
are(a) =
        119.6 \text{ yd}^2
        3.954 \text{ rod}^2
        0.0247 A
        100 \text{ m}^2
        1.00 dam<sup>2</sup>
        100 ca
        0.01 ha
barrel, U.S. fruits and vegetables =
        115.62 L
        13.12 pk
        3.28 bu
        30.55 gal
        7056 in.<sup>3</sup>
        4.083 \text{ ft}^3
barrel, U.S. liquid (bbl) =
         119.24 L
        262.8 lb H<sub>2</sub>O
```

```
26.23 \text{ gal}_{BI}
         31.5 gal
         4.21 ft<sup>3</sup>
 barrel, U.S. petroleum =
         158.98 L
         34.97 \text{ gal}_{BI}
         42 gal
 bushel, B.I. (bu_{Bl}) =
         36.368 L
         0.036 \text{ m}^3
         9.607 gal
         1.032 bu
         2219.36 in.<sup>3</sup>
         1.284 \, \mathrm{ft}^3
         8 gal<sub>BI</sub>
         4 pk<sub>BI</sub>
bushel, U.S. (bu) =
         35.238 L
         35,238 \text{ cm}^3
         64 pt. dry
         32 qt, dry
         4 pk
         2150.42 in.<sup>3</sup>
         1.244 ft<sup>3</sup>
centare or centiare (ca) =
         1549.9 in.<sup>2</sup>
         10.764 ft<sup>2</sup>
         1.196 yd<sup>2</sup>
         1.0 \text{ m}^2
        0.01 a
centigram (cg) =
        0.154 grain
        0.000353 oz
        3.53 \times 10^{-4} \text{ oz}
        10 mg
        0.01 g
centiliter (cL) =
        0.338 fl oz
        10 mL
        0.01 L
centimeter (cm) =
        0.394 in.
        0.0328 \text{ ft}
```

```
0.0109 yd
        10 mm
        0.01 \, \text{m}
centimeter of mercury (cm Hg) =
        0.444 ft H<sub>2</sub>O
        0.193 lb/in.<sup>2</sup>
        27.74 lb/ft<sup>2</sup>
        135.462 \text{ kg/m}^2
        0.0132 atm
centimeter per second (cm/s) =
        0.0328 \text{ ft/s}
        1.969 ft/min
        0.000373 mi/min
        3.73 \times 10^{-4} \text{ mi/min}
        0.0224 mph
        0.6 m/min
        0.036 km/h
centner (zentner) =
        50 kg
cubic centimeter (cm^3) =
        0.0338 fl oz
        0.00211 pt
        0.00106 qt
        0.000264 gal
        2.64 \times 10^{-4} \text{ gal}
        0.061 \text{ in.}^3
        0.0000353 \text{ ft}^3
        3.53 \times 10^{-5} \text{ ft}^3
        0.00000131 \text{ yd}^3
        1.31 \times 10^{-6} \text{ yd}^3
        0.0353 oz H<sub>2</sub>O
        1.0 g H<sub>2</sub>O
        1.0 mL
        0.001 L
        1000 \text{ mm}^3
        0.000001 \text{ m}^3
        10^{-6} \text{ m}^3
cubic decimeter (dm^3) =
        61.023 in.<sup>3</sup>
        0.0353 \text{ ft}^3
         1000 \text{ cm}^3
        0.001 \text{ m}^3
```

1.0 L

```
cubic foot (ft^3) =
         28,317 mL
         28.317 \text{ cm}^3
         28.317 L
         28.317 \text{ dm}^3
         0.0283 \text{ m}^3
         28.317 g H<sub>2</sub>O
         28.317 \text{ kg H}_2\text{O}
         957.5 fl oz
         59.84 pt
         29.92 qt
         7.481 gal
         1728 in.<sup>3</sup>
        0.037 \text{ yd}^3
        436,984 grain H<sub>2</sub>O
        998.85 oz H_2O
        62.427 lb H<sub>2</sub>O
cubic feet per minute (ft^3/min) =
        471.9 \text{ cm}^3/\text{s}
        0.472 L/s
        28.317 L/min
        1699 L/h
        29.92 qt/min
        1795.32 qt/h
        0.125 gal/s
        7.481 gal/min
        448.83 gal/h
        10,772 gal/d
        60 \text{ ft}^3/\text{h}
        998.85 oz H<sub>2</sub>O/min
        62.427 lb H<sub>2</sub>O/min
cubic feet per second (ft^3/s) =
        28.317 L/s
        1699 L/min
        101,941 L/h
        7.481 gal/s
        448.83 gal/min
        26.930 gal/h
        60 \text{ ft}^3/\text{min}
        3600 \text{ ft}^3/\text{h}
        646,400 gal/d
cubic inch (in.^3) =
        16.387 g H<sub>2</sub>O
        16.387 mL
```

0.0164 L 16.387 cm³

```
0.00001639 m<sup>3</sup>
        1.639 \times 10^{-5} \text{ m}^3
        0.554 fl oz
        0.0346 pt
        0.0173 \text{ qt}
        0.00433 gal
        0.000579 ft<sup>3</sup>
        5.79 \times 10^{-4} \text{ ft}^3
        0.00002143 \text{ yd}^3
        2.143 \times 10^{-5} \text{ yd}^3
        0.578 oz H<sub>2</sub>O
        0.036 lb H_2O
cubic meter (m^3) =
        33,815 fl oz
        2113 pt
        1057 qt
        264.2 gal
        61,023 \text{ in.}^3
        35.31 \text{ ft}^3
        1.308 \text{ yd}^3
        2204.6 lb H<sub>2</sub>O
        1,000,000 g H<sub>2</sub>O
        1,000,000 mL
        1,000,000 \text{ cm}^3
        1000 \text{ dm}^3
        1000 L
        1 st
cubic millimeter (mm^3) =
        0.001 mL
cubic yard (yd^3) =
        764.559 L
        764,600 \text{ cm}^3
        0.7646 \text{ m}^3
        0.7646 st
        1615.79 pt
        807.89 qt
        201.97 gal
        46,656 in.<sup>3</sup>
        27 \text{ ft}^3
        1685.5 lb H<sub>2</sub>O
cubic yards per minute (yd^3/min) =
        12.743 L/s
        764.559 L/min
```

```
3.37 gal/s
        201.97 gal/min
        0.45 \text{ ft}^3/\text{s}
        27 ft<sup>3</sup>/min
cup =
        236.58 mL
        236.58 \text{ cm}^3
        48 tsp
        16 tbsp
        8 fl oz
        2 gi
        8.344 oz H<sub>2</sub>O
decare =
        1196 \text{ yd}^2
        0.2471 A
        1000 \text{ m}^2
        10 a
        0.1 ha
deciare =
        11.96 yd<sup>2</sup>
10 m<sup>2</sup>
decigram (dg) =
        1.5432 grain
        100 mg
        10 cg
        0.1 g
deciliter (dL) =
        3.381 fl oz
        0.211 pt
        0.106 qt
        6.103 \text{ in.}^3
        100 mL
        10 cL
       0.1 L
decimeter (dm) =
        3.937 in.
        0.328 \text{ ft}
        10 cm
        0.1 m
decistere (dst) =
        3.531 \, \mathrm{ft}^3
       0.1 \text{ m}^3
       0.1 st
```

```
dekagram (dag) =
       0.353 \text{ oz}
        10 g
dekaliter (daL) =
       2.642 gal
       1.135 pk
       0.284 bu
       610.25 in.<sup>3</sup>
       0.3531 \text{ ft}^3
       10 L
dekameter (dam) =
       393.7 in.
       32.808 ft
       1000 cm
       10 m
dekastere (dast) =
       353.1 ft<sup>3</sup>
       13.08 \text{ yd}^3
       10 \text{ m}^3
       10 st
doppel zentner (dz) =
       100 kg
       1.0 ql
       220.46 lb
dram, avdp (dr) =
       1.771 g
       27.343 grain
       0.0625 oz
dram, fluid, B.I. (fl dr_{BI}) =
       3.552 \text{ cm}^3
       0.961 fl dr
       0.217 \text{ in.}^3
       60 \text{ minim}_{BI}
dram, fluid, U.S. (fl dr) =
       3.696 mL
       60 minim
       0.125 fl oz
       0.225 \text{ in.}^3
fathom (fath) =
       1.829 m
       6 ft
       2 yd
```

foot (ft) =304.8 mm 30.480 cm 0.305 m 12 in. 0.333 yd foot of water pressure = 304.79 kg/m^2 0.434 lb/in.^2 62.427 lb/ft² 0.886 in. Hg 0.0295 atm feet per minute (ft/min) = 0.5080 cm/s 0.305 m/min 18.29 m/h 0.0183 km/h 0.0167 ft/s 0.0114 mph feet per second (ft/s) =30.48 cm/s 18.29 m/min 1.097 km/h 0.0114 mi/min 0.682 mph 0.593 kn $gallon, B.I. (gal_{BI}) =$ 4.545 L 4.803 qt 1.201 gal 277.420 in.³ 0.161 ft^3 $4 qt_{BI}$ gallon, U.S. (gal) =3785.4 mL 3.785 L 3785.4 cm³ 0.00379 m^3 3785.4 g H₂O 3.785 kg H₂O 256 tbsp 128 fl oz

32 gi

```
8 pt
         4 qt
         0.833 gal<sub>BI</sub>
         231 in.<sup>3</sup>
         0.134 \text{ ft}^3
         0.00495 \text{ yd}^3
         58,416 grain H<sub>2</sub>O
         133.52 oz H<sub>2</sub>O
         8.345 lb H<sub>2</sub>O
gallons per minute (gal/min) =
         0.0631 L/s
         3.875 L/min
         5.45 t H<sub>2</sub>O/d
        6.009 ton, short H_2O/d
        0.134 ft<sup>3</sup>/min
        8.021 \text{ ft}^3/\text{h}
        0.00223 \text{ ft}^3/\text{s}
        1000 gal/min flow yields 1 A-ft in 5 h 26 min
gill, B.I. (gi_{BI}) =
        142.066 cm<sup>3</sup>
        8.669 \text{ in.}^3
        1.665 cup
        1.201 gi
        5 fl oz<sub>BI</sub>
gill, U.S. (gi) =
        118.291 mL
        0.118 L
        4 fl oz
        0.25 pt
        7.218 \text{ in.}^3
        0.5 cup
        8 tbsp
grain, avdp (grain) =
        64.8 mg
        0.0648 g
        0.0000648 kg
        6.48 \times 10^{-5} \text{ kg}
        1.0 grain tr
        0.0417 dwt
        0.0366 dr
        0.00229 oz
        0.00208 oz tr
        0.000143 lb
        1.43 \times 10^{-4} \text{ lb}
```

```
grain, troy (grain tr) =
       1.0 grain
grains per B.I. gallon (grain/gal<sub>BI</sub>) =
       14.26 ppm
grains per U.S. gallon (grain/gal) =
       17.12 ppm
       142.86 lb/1,000,000 gal
gram(g) =
       15.432 grain
       0.564 dr
       0.0353 oz
       0.0322 oz tr
       0.0022 lb
       0.0338 fl oz H_2O
       0.0021 pt H_2O
       1,000,000 \mu g
       1000 mg
       10 dg
       0.001 \text{ kg}
       1.0 mL H<sub>2</sub>O
       1.0 \text{ cm}^3 \text{ H}_2\text{O}
       0.001 L H<sub>2</sub>O
grams per liter (g/L) =
       58.416 grain/gal
       0.134 oz/gal
       0.999 \text{ oz/ft}^3
       8.345 lb/1000 gal
       0.0624 \text{ lb/ft}^3
       1000 ppm
       3.785 g/gal
hectare (ha) =
       107,640 ft<sup>2</sup>
       2.471 A
       10,000 \text{ m}^2
       10,000 ca
       100 a
       1.0 \text{ hm}^2
hectogram (hg) =
       3.527 oz
       0.220 lb
       100 g
       10 dag
       0.1 \text{ kg}
```

```
hectoliter (hL) =
       26.418 gal
       3.531 \text{ ft}^3
       2.838 bu
       100 L
       10 daL
       0.1 \text{ m}^3
hectometer (hm) =
       328 ft 1 in.
       109.36 yd
       100 m
       10 dam
hundredweight, long (cwt, long) =
       50.802 kg
       0.0508 t
       1792 oz
       112 lb
       0.05 ton, long
       1.12 cwt, short
hundredweight, short (cwt, short) =
       45.359 kg
       0.0454 t
       1600 oz
       100 lb
       0.05 ton, short
       0.893 cwt, long
inch (in.) =
       25,400 μm
       25.40 mm
       2.540 cm.
       0.0254 m
      0.0833 ft
      0.0278 yd
inch of mercury (in. Hg) =
       344.07 \text{ kg/m}^2
      0.489 lb/in.<sup>2</sup>
       70.45 lb/ft<sup>2</sup>
       1.129 ft H<sub>2</sub>O
      0.0334 atm
inch of water (in. H_2O) =
      25.40 \text{ kg/m}^2
      0.578 \text{ oz/in.}^2
      0.0361 \text{ lb/in.}^2
```

```
5.201 lb/ft<sup>2</sup>
       0.0735 in. Hg
       0.00246 atm
kilogram (kg) =
       15,432 grain
       35.274 oz
       2.2046 lb
       0.0011 ton, short
       1.057 qt H<sub>2</sub>O
       1,000,000 mg
       1000 g
       10 hg
       0.001 t
       1.0 L H<sub>2</sub>O
kilograms per hectare (kg/ha) =
       0.892 lb/A
kiloliter(kL) =
       264.17 gal
       35.314 ft<sup>3</sup>
       1,000,000 mL
       1000 L
       10 hL
       1.0 \text{ m}^3
       2204.6 lb H<sub>2</sub>O
       1000 kg H<sub>2</sub>O
kilometer (km) =
       3280.84 ft
       1093.61 yd
      0.621 mi
      0.540 INM
       100,000 cm
       1000 m
       10 hm
      0.1 mym
knot(kn) =
       1.0 INM/h
       1.15 mph
liter (L) =
       202.9 tsp
       67.6 tbsp
       33.81 fl oz
       4.23 cup
```

2.113 pt

```
1.057 qt
       0.908 qt, dry
       0.264 gal
       35.27 \text{ oz } H_2O
       2.2046\ lb\ H_2O
       61.025 \text{ in.}^3
       0.0353 \text{ ft}^3
       0.00131 \text{ yd}^3
       1000 mL
       1000 \text{ cm}^3
       10 dL
       1.0~\mathrm{dm}^3
       0.001 \text{ m}^3
       1000 g H<sub>2</sub>O
       1.0 kg H<sub>2</sub>O
liters per minute (L/min) =
       0.0044 gal/s
       0.264 gal/min
       15.852 gal/h
       0.0353 \text{ ft}^3/\text{min}
       2.119 \text{ ft}^3/\text{h}
meter(m) =
       39.37 in.
       3.281 ft
       1.094 yd
       0.199 rod
       1000 mm
       100 cm
       10 dm
       0.001 km
       0.0001 mym
meters per minute (m/min) =
       0.0547 ft/s
       3.281 ft/min
       0.0373 mph
       1.667 cm/s
       0.06 km/h
meters per second (m/s) =
       3.281 ft/s
       196.86 ft/min
       0.0373 mi/min
       2.237 mph
       0.06 km/min
       3.60 km/h
```

```
microgram (\mu g) =
       0.00001543 grain
       1.543 \times 10^{-5} \text{ grain}
       0.001 mg
       0.000001 g
       10^{-6} g
 microliter (\muL) =
       0.001 mL
       0.000001 L
       10^{-6} L
       1.0 \text{ mm}^3
 micrometer (\mu m) =
       0.00003937 in.
       3.937 \times 10^{-5} in.
       1000 nm
       0.001 mm
       0.000001 m
       10^{-6} \text{ m}
mile (mi) =
       160,935 cm
       1609.35 m
       1.609 km
       0.161 mym
       5280 ft
       1760 yd
       320 rod
      0.870 INM
miles per hour (mph) =
      44.70 cm/s
      26.82 m/min
      1.609 km/h
      1.467 ft/s
      88 ft/min
      0.870 \text{ kn}
miles per minute (mi/min) =
      2682.25 cm/s
      1.609 km/min
      96.561 km/h
      88 ft/s
      60 mph
milligram (mg) =
      0.0154 grain
      1000 μg
      0.001 g
```

```
milligrams per liter (mg/L) of water =
       1 ppm (by weight)
milliliter (mL) =
       0.203 tsp
       0.0338 fl oz
       0.002 pt
       0.001 qt
       0.061 \text{ in.}^3
       0.035 oz H<sub>2</sub>O
       0.002 lb H<sub>2</sub>O
       1000 \text{ mm}^3
       1.0~\mathrm{cm}^3
       0.001 L
       1.0 g H<sub>2</sub>O
       20 drops (\pm, depending on viscosity
          temperature, dropper bore, and force of
          propulsion)
millimeter (mm) =
       0.0394 in.
       1,000,000 nm
       1000 μm
       0.1 cm
       0.001 \, m
million gallons per day =
       43.81 L/s
       2628.75 L/min
       11.57 gal/s
       694.44 gal/min
       41,667 gal/h
       1.547 \text{ ft}^3/\text{s}
       92.83 ft<sup>3</sup>/min
       5569.67 ft<sup>3</sup>/h
        133,700 ft<sup>3</sup>/d
minim, B.I. (minim_{BI}) =
       59.194 mm<sup>3</sup>
       0.0592 \text{ cm}^3
        0.961 minim
       0.00361 \text{ in.}^3
        0.0167 fl dr<sub>BI</sub>
minim, U.S. (minim) =
        0.0616 mL
        0.00376 \text{ in.}^3
        0.0167 fl dr
```

```
myriagram (myg) =
      22.046 lb
      10,000 g
      10 kg
myrialiter (myL) =
      2641.7 gal
      353.14 ft<sup>3</sup>
      283.78 bu
      83.86 bbl
      10,000 L
myriameter (mym) =
      6.214 mi
      10,000 m
      10 km
myriare =
      247.1 A
      1,000,000 \text{ m}^2
      100 ha
nanogram (ng) =
      0.000000001 g
      10^{-9} {\rm g}
nanometer (nm) =
      0.00000001 m
      10^{-9}\ m
      10 Ä
nautical mile (INM) =
       1852 m
       1.852 km
      6076.115 ft
      2025.37 yd
       1.151 mi
ounce, avdp (oz) =
      28.3495 g
      0.02835 kg
       0.00002835 t
       2.835 \times 10^{-5} t
       437.5 grain
       16 dr
       0.0625 lb
       0.00003125 ton, short
       3.125 \times 10^{-5} ton, short
       0.00002790 ton, long
```

```
2.790 \times 10^{-5} ton, long
          0.911 oz tr
          0.959 fl oz H<sub>2</sub>O
 ounce, fluid, B.I. (fl oz_{RI}) =
          28.416 cm<sup>-3</sup>
          1.734 in.<sup>3</sup>
         0.961 fl oz
         8 fl dr<sub>BI</sub>
 ounce, fluid, U.S. (fl oz) =
         29.573 g H<sub>2</sub>O
         29.573 mL
         0.0296 L
         29.573 \text{ cm}^3
         0.00002957\ m^3
         2.957 \times 10^{-5} \text{ m}^3
         1.043 oz H<sub>2</sub>O
         0.0652 lb H<sub>2</sub>O
         8 fl dr
         0.125 cup
         0.0625 pt
         0.0313 qt
         0.00781 gal
         6 tsp
         2 tbsp
         1.804 \text{ in.}^3
        0.00104 \text{ ft}^3
ounce, troy (oz tr) =
        31.103 g
        480 grain
        17.555 dr
        20 dwt
      - 1.097 oz
        0.0833 lb tr
parts per billion (ppb), by weight =
        1.0 \text{ ng/mL H}_2\text{O}
        1.0 \mu g/L H<sub>2</sub>O
        3.785 \mu g/gal H<sub>2</sub>O
        28.316 \, \mu g/ft^3 \, H_2O
        0.001 mg/L H<sub>2</sub>O
        1.233 g/A-ft H<sub>2</sub>O
        0.001 ppm (by weight)
        0.0000001 0/0
        10^{-7} \, \text{o/o}
        0.00001 0/00
        10^{-6} \, \text{m/m}
```

parts per hundred (pph), by weight =

1.0 g/100 mL H₂O

10 g/1000 mL H₂O

10 g/L H₂O

4.54 g/lb

 $4.73 \text{ g/pt H}_2\text{O}$

37.85 g/gal H₂O

283.17 g/ft³ H₂O

10 mL/1000 mL

10 mL/L

37.85 mL/gal

10 cm³/L

17.85 cm³/gal

1.28 fl oz/gal

1.34 oz/gal H₂O

 $9.988 \text{ oz/ft}^3 \text{ H}_2\text{O}$

 $0.624 \text{ lb/ft}^3 \text{ H}_2\text{O}$

1.0 %

10 %

parts per million (ppm), by weight =

 $1.0 \mu g/mL H₂O$

 $1.0 \text{ mg/L H}_2\text{O}$

1.0 mg/kg

3.785 mg/gal H₂O

0.001 g/L H₂O

0.00378 g/gal H₂O

0.0283 g/ft³ H₂O

0.378 g/100 gal H₂O

 $1.0 \text{ g/m}^3 \text{ H}_2\text{O}$

1233 g/A-ft

0.001 mL/L

0.00378 mL/gal

0.378 mL/100 gal

1.0 mL/1,000,000 mL

1.0 mL/1000 L

0.0584 grain/gal H₂O

0.0702 grain/gal_{BI} H₂O

0.437 grain/ft³ H₂O

0.134 oz/1000 gal H₂O

0.999 oz/1000 ft³ H₂O

1.0 lb/1,000,000 lb H₂O

0.0000624 lb/ft³ H₂O

 $6.24 \times 10^{-5} \text{ lb/ft}^3 \text{ H}_2\text{O}$

2.718 lb/A-ft H₂O

 $8.345 \text{ lb}/10^6 \text{ gal H}_2\text{O}$

0.008 pt/1000 gal

```
0.0599 \text{ pt}/1000 \text{ ft}^3
         1.303 qt/A-ft
         0.326 gal/A-ft
         0.0001 0/0
         0.001 0/00
parts per thousand (ppt), by weight =
         1.0 mg/mL H<sub>2</sub>O
         1.0 g/L H<sub>2</sub>O
         3.785 g/gal H<sub>2</sub>O
        28.316 g/ft<sup>3</sup> H<sub>2</sub>O
         15.432 grain/L H<sub>2</sub>O
        0.134 oz/gal H<sub>2</sub>O
        0.999 \text{ oz/ft}^3 \text{ H}_2\text{O}
        0.1 0/0
        1.0 0/00
parts per trillion (pptr), by weight =
        1.0 pg/mL H<sub>2</sub>O
        1.0 \text{ ng/L H}_2\text{O}
        0.001 \mu g/L H_2O
        0.000001 ppm (by weight)
        10^{-6} ppm (by weight)
        0.000000001^{-0}/\sigma
        10-10 %
        0.00000001^{-0}/_{00}
        10^{-9} 0/00
peck, B.I. (pk_{BI}) =
        9092 \text{ cm}^3
        0.00909 \text{ m}^3
        1.032 pk
        554.84 in.<sup>3</sup>
        0.321 \text{ ft}^3
        8 qt_{BI}
        2 gal<sub>BI</sub>
peck, U.S. (pk) =
        8.810 L
        8 qt, dry
        0.25 bu
        537.605 in.<sup>3</sup>
        0.311 \text{ ft}^3
pennyweight, troy (dwt) =
        1.555 g
        24 grain
        0.05 oz tr
        0.00417 lb tr
```

```
picogram (pg) =
       0.000000000001 g
       10^{-12} g
pint, B.I. (pt_{BI}) =
        568.26 \text{ cm}^3
       34.678 in.<sup>3</sup>
        1.201 pt
        1.032 pt, dry
       4 gi_{BI}
pint, U.S. dry (pt, dry) =
        550.6 \text{ cm}^3
        0.551 L
        33.600 \text{ in.}^3
        1.164 pt
        0.582 qt
        0.5 qt, dry
pint, U.S. liquid (pt) =
        473.17 mL
        473.17 \text{ cm}^3
        0.473 L
        0.000473 \text{ m}^3
        4.73 \times 10^{-4} \text{ m}^3
        473.17 g H<sub>2</sub>O
        32 tbsp
        16 fl oz
        4 gi
        2 cup
        0.859 pt, dry
        0.430 qt, dry
        0.5000 qt
        0.1250 gal
        28.875 in.<sup>3</sup>
        0.0167 \text{ ft}^3
         16.688 oz H<sub>2</sub>O
         1.043 lb H<sub>2</sub>O
pound, avdp (lb) =
         453.592 g
         0.454 \text{ kg}
         0.000454 t
         4.54 \times 10^{-4} t
         453.592 mL H<sub>2</sub>O
         453.592 \text{ cm}^3 \text{ H}_2\text{O}
         0.454\ L\ H_2O
         7000 grain
         256 dr
```

```
16 oz
         14.583 oz tr
         1.215 lb tr
        0.0005 ton, short
         15.338 fl oz H<sub>2</sub>O
        0.959 pt H<sub>2</sub>O
        0.479 qt H<sub>2</sub>O
        0.120 gal H<sub>2</sub>O
        27.680 in.<sup>3</sup> H<sub>2</sub>O
        0.0160 ft<sup>3</sup> H<sub>2</sub>O
pound, troy (lb tr) =
        373.241 g
        0.373 \text{ kg}
        0.000373 t
        3.73 \times 10^{-4} t
        5760 grain
        240 dwt
        210.66 dr
        13.166 oz
        12 oz tr
        0.823 lb
        0.000411 ton, short
        4.11 \times 10^{-4} ton, short
        0.000367 ton, long
        3.67 \times 10^{-4} ton, long
pounds per acre (lb/A) =
        1.121 kg/ha
pounds per million gallons of water =
        0.120 ppm (by weight)
pound of water per minute =
        0.4536 L/min
       0.120 gal/min
       0.0160 ft<sup>3</sup>/min
quart, B.I. (qt_{BI}) =
        1.136 L
        1.201 qt
        1.032 qt, dry
       69.355 in.<sup>3</sup>
       2 pt<sub>BI</sub>
quart, U.S. dry (qt, dry) =
       1101 cm<sup>3</sup>
       1.101 L
       2.328 pt
```

```
2 pt. dry
        1.164 qt
        67.200 in.<sup>3</sup>
quart, U.S. liquid (qt) =
        946.34 g H<sub>2</sub>O
        946.34 mL
        0.946 L
        946.34 cm<sup>3</sup>
        0.000946 m<sup>3</sup>
        9.46 \times 10^{-4} \text{ m}^3
        64 tbsp
        32 fl oz
        8 gi
        4 cup
        2 pt
        0.859 qt, dry
        0.25 gal
        57.749 in.<sup>3</sup>
        0.0334 \, \mathrm{ft}^3
        33.376 oz H<sub>2</sub>O
        2.086 lb H<sub>2</sub>O
quintal (ql) =
         220.46 lb
         100,000 g
         100 kg
         10 myg
         1.0 dz
 rod =
         5.029 m
         198 in.
         16.5 ft
         5.50 yd
square centimeter (cm^2) =
         0.155 \text{ in.}^2
         0.00108 \text{ ft}^2
         100 \text{ mm}^2
         0.0001\ m^2
 square decimeter (dm^2) =
         15.50 in.<sup>2</sup>
         100 \text{ cm}^2
         0.01 \text{ m}^2
 square dekameter (dam^2) =
         119.6 \text{ yd}^2
         100 \text{ m}^2
```

```
square foot (ft^2) =
          929.03 \text{ cm}^2
          0.0929 \text{ m}^2
          144 in.<sup>2</sup>
          0.111 \text{ yd}^2
          0.00002296 A
          2.296 \times 10^{-5} \text{ A}
          0.00000003587 mi<sup>2</sup>
          3.587 \times 10^{-8} \text{ mi}^2
         square 12 in. per side
 square hectometer (hm^2) =
          107,600 ft<sup>2</sup>
         2.471 A
          10,000 \text{ m}^2
          100 dam<sup>2</sup>
          100 a
         1.0 ha
square inch (in.^2) =
         645.16 mm<sup>2</sup>
         6.452 \text{ cm}^2
         0.00694 ft<sup>2</sup>
         0.00077 \text{ yd}^{-2}
square kilometer (km^2) =
         10,764,000 ft<sup>2</sup>
         1,196,000 \text{ yd}^2
         247.1 A
         0.386 \text{ mi}^2
         1,000,000 \text{ m}^2
         10,000 a
         100 \text{ hm}^2
         100 ha
square meter (m^2) =
         1550.007 in.<sup>2</sup>
         10.764 \text{ ft}^2
         1.196 \text{ yd}^2
        0.000247 A
        2.47 \times 10^{-4} \text{ A}
        0.0000003861 mi<sup>2</sup>
        3.861 \times 10^{-7} \text{ mi}^2
         10,000 \text{ cm}^2
         100 \text{ dm}^2
        1.0 ca
        0.01 a
square mile (mi^2) =
        2,590,000 \text{ m}^2
```

```
259 ha
        2.590 \text{ km}^2
        27,878,000 ft<sup>2</sup>
        3,098,000 \text{ yd}^2
        102,400 \text{ rod}^2
        640 A
square millimeter (mm^2) =
        0.00155 \text{ in.}^2
        0.01 \text{ cm}^2
square rod (rod^2) =
        25.29 \text{ m}^2
        25.29 ca
        0.253 a
        272.25 ft<sup>2</sup>
        30.25 \text{ yd}^2
square yard (yd^2) =
        8361.3 cm<sup>2</sup>
        0.836 \text{ m}^2
        1296 in.<sup>2</sup>
        9 \text{ ft}^2
        0.000207 A
        2.07 \times 10^{-4} \text{ A}
        0.0000003228 mi<sup>2</sup>
        3.228 \times 10^{-7} \text{ mi}^2
stere(st) =
        1.308 \text{ yd}^3
        1.0 \text{ m}^3
stone =
        6.350 kg
         14 lb
tablespoon (tbsp) =
         14.79 mL
         14.79 \text{ cm}^3
         3 tsp
         0.50 fl oz
 teaspoon (tsp) =
         4.929 mL
         4.929 \text{ cm}^3
         0.333 tbsp
         0.167 fl oz
 ton, long =
         1016.05 kg
         1.016 t
         35,840 oz
```

```
2240 lb
       20 cwt, long
       1.120 ton, short
ton, metric (t) =
       2204.62 lb
       0.984 ton, long
       1.102 ton, short
       1000 kg
       1000 L H<sub>2</sub>O
       10 ql
       10 dz
ton, short =
      907.184 kg
      0.907 t
      32,000 oz
      29,167 oz tr
      2430.56 lb tr
      2000 lb
      20 cwt, short
      0.893 ton, long
ton (short) of water per 24 h =
      0.907 t/24 h
      37.80 L/h
      83.333 lb/h
      0.166 gal/min
      9.986 gal/h
      1.335 \text{ ft}^3/\text{h}
yard (yd) =
      91.44 cm
      0.914 m
      36 in.
      3 ft
      0.182 rod
      0.000568 mi
      5.68 \times 10^{-4} \text{ mi}
```

Conversion Tables

Distance (miles and kilometers)

Miles to kilometers

km	mi	km	mi	km
. 1.61	10	16.09	100	160.94
. 3.22	20	32.19	150	241.40
. 4.83	30	48.28	200	321.87
. 6.44	40	64.37	300	482.80
. 8.05	50	80.47	400	643.74
. 9.66	60	96.56	500	804.67
.11.27	70	112.65	600	965.61
.12.87	80	128.75	700	1126.54
.14.48	90	144.84	800	1287.48
			900	1448.41
			1000	1609.35
	. 1.61 . 3.22 . 4.83 . 6.44 . 8.05 . 9.66 .11.27 .12.87	. 1.61 10	. 1.61 10 16.09 . 3.22 20 32.19 . 4.83 30 48.28 . 6.44 40 64.37 . 8.05 50 80.47 . 9.66 60 96.56 .11.27 70 112.65 .12.87 80 128.75	. 1.61 10 16.09 100

Kilometers to miles

km	mi	km	mi	km	mi
1 2 4 5 6 7 8	. 1.24 . 1.86 . 2.49 . 3.11 . 3.73 . 4.35	20	6.21 12.43 18.64 24.85 31.07 37.28 43.50 49.71	150	62.14 93.21 124.27 186.41 248.55 310.68 372.82 434.96 497.10 559.23
					559.23

Capacity (gallons and liters)

Gallons to liters

gal	liters	gal	liters
2 3 4 5 6	3.785 7.571 11.356 15.141 18.927 22.712 26.497	20 30 40 50 60	
	30.283	90	302.827 340.680 378.533

Liters to gallons

liters	gal	liters	gal
1	0.264	10	2.642
2	0.528	20	5.284
3	0.793	30	7.926
4	1.057	40	10.568
5	1 . 321	50	13.209
6	1 . 585	60	15.852
7	1 . 849	70	18.494
8	2.114	80	21.136
9	2.378	90	23.778
		100	26.417

Temperature ^a

Fahrenheit to Celsius

°F	°C	°F	°C
212.0	100.0	75.0	23.9
200.0	93.3	74.0	23.3
190.0	87.8	73.0	22.8
180.0	82.2	72.0	22.2
170.0	76.7	71.0	21.7
160.0	71.1	70.0	21.1
150.0	65.6	69.0	20.6
140.0	60.0	68.0	20.0
130.0	54.4	67.0	19.4
120.0	48.9	66.0	18.9
110.0	43.3	65.0	18.3
100.0	37.8	64.0	17.8
98.6	37.0	63.0	17.2
95.0	35.0	62.0	16.7
90.0	32.2	61.0	16.1
89.0	31.7	60.0	15.6
88.0	31.1	59.0	15.0
87.0	30.6	58.0	14.4
86.0	30.0	57.0	13.8
85.0	29.4	56.0	13.3
84.0	28.9	55.0	12.8
83.0	28.3	50.0	10.0
82.0	27.8	45.0	7.2
81.0	27.2	40.0	4.4
80.0	26.7	35.0	1.7
79.0	26.1	32.0	0
78.0	25.6	0.0	-17.8
77.0	25.0	-40.0	-40.0
76.0	24.4		

^aFormula for conversion of temperatures: °F = (°C × 9/5) + 32 °C = (°F - 32) × 5/9 1.8 °C = °F - 32 °K = °C + 273 °R = °F + 460

Celsius to Fahrenheit

°C	°F	°C	°F	°C	°F
100.0	212.0	66.0	150.8	32.0	89.6
99.0	210.2	65.0	149.0	31.0	87.8
98.0	208.4	64.0	147.2	30.0	86.0
97.0	206.6	63.0	145.4	29.0	84.2
96.0	204.8	62.0 .	143.6	28.0	82.4
95.0	203.0	61.0 .	141.8	27.0	80.6
94.0	201.2	60.0 .	140.0	26.0	78.8
93.0	199.4	59.0 .	138.2	25.0	77.0
92.0	197.6	58.0 .	136.4	24.0	75.2
91.0	195.8	57.0 .	134.6	23.0	73.4
90.0	194.0	56.0 .	132.8	22.0	71.6
89.0	192.2	55.0 .	131.0	21.0	69.8
88.0	190.4	54.0 .	129.2	20.0	68.0
87.0	188.6	53.0 .	127.4	19.0	66.2
86.0	186.8	52.0 .	125.6	18.0	64.4
85.0	185.0	51.0 .	123.8	17.0	62.6
84.0	183.2	50.0 .	122.0	16.0	60.8
83.0	181.4	49.0 .	120.2	15.0	59.0
82.0 ,	179.6	48.0 .	118.4	14.0	57.2
81.0	177.8	47.0 .	116.6	13.0	55.4
80.0	176.0	46.0 .	114.8	12.0	53.6
79.0	174.2	45.0 .	113.0	11.0	51.8
78.0	172.4	44.0 .	111.2	10.0	50.0
77.0	170.6	43.0 .	109.4	9.0	48.2
76.0	168.8	42.0 .	107.6	8.0	46.4
75.0	167.0	41.0 .	105.8	7.0	44.6
74.0	165.2	40.0 .	104.0	6.0	42.8
73.0	163.4	39.0 .	102.2	5.0	41.0
72.0	161.6	38.0 .	100.4	4.0	39.2
71.0	159.8	37.0 .	98.6	3.0	37.4
70.0	158.0	36.0 .	96.8	2.0	35.6
	156.2	35.0 .	95.0	1.0	33.8
68.0	154.4	34.0 .	93.2	0	32.0
67.0	152.6	33.0 .	91.4		

Bibliography

- CBE Style Manual Committee. 1983. CBE style manual: a guide for authors, editors, and publishers in the biological sciences, 5th ed. Council of Biology Editors, Inc., Bethesda, Md.
 - Cheremisinoff, N. P., and P. N. Cheremisinoff. 1980. Unit conversions and formulas manual. Ann Arbor Science Publishers, Inc., Ann Arbor, Mich.
 - Herwig, N. 1979. Handbook of drugs and chemicals used in the treatment of fish diseases. Charles C. Thomas, Publisher, Springfield, Ill.
 - Hoffman, G. L., and F. P. Meyer. 1974. Parasites of freshwater fishes. TFH Publications, Inc., Ltd., Neptune. N.J.
 - LeMaraic, A. L., and J. P. Ciaramella, editors. The complete metric system with the international system of units. Abbey Books, Metric Media Book Publishers, Somers, N.Y.
 - LeMaraic, A. L., and J. P. Ciaramella, editors. The metric encyclopedia. Abbey Books, Metric Media Book Publishers, Somers, N.Y.
 - U.S. Government Printing Office. 1984. Style manual. U.S. Government Printing Office, Washington, D.C.
 - Webster's New Collegiate Dictionary. 1960. G. & C. Merriam Co., Springfield, Mass.
 - Wellborn, T. L., Jr. 1974. Calculation of treatment levels for control of fish diseases and aquatic weeds. Mississippi State University, Ext. Serv. Inf. Sheet 673.